Effect of the Systemic Disease in the Endodontic Treatment Clinical Microbiological Analysis

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Abstract: Patients with diabetes have increased periodontal disease in teeth involved endodontically and have a reduced likelihood of success of endodontic treatment in cases with preoperative periradicular lesions.
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Key word; Systemic Disease, Endodontic Microbiological

1. Introduction:

The tooth with its pulp and its supporting structures must be viewed as a biologic unit a patient with periodontically and endodontically involved teeth is a challenge for the periodontist. Dental plaque is one of the primary initiating factor for both periodontal and endodontal disease. In periodontics it is treated in the marginal area and in endodontics it is treated at the apex (1) All these factors will overlap to varying degrees. While the competent dental surgeon does all he can to avoid causing the patient pain, it is not perhaps appreciated how severe the effects of pain and anxiety can be. The severity of the dangers of mental stress in relation to myocardial infarction have been emphasized by the outher this irregular cardiac action often subsides when the patient becomes or is made more tranquil. Stressful conditions such as fear and pain are associated with increased secretion of adrenaline-like agents (catecholamines) and these in turn can cause disturbances of cardiac rhythm or, ultimately, ventricular fibrillation. Premonitory disturbances may not be obvious clinically but are clearly demonstrable on the electro-cardiogram and can be dangerous to patients with cardiac disease.(2) There are of course increasing numbers of such patients having dental treatment nowadays Clearly the main risks in dentistry are associated with surgery, especially under general anaesthesia. According too the state of the patient and of any drugs he may be taking, there may be risks, depending on the amount of blood lost, the duration and depth of anaesthesia and possibly from disseminated infections in susceptible patients. Generally speaking, these risks are avoided in endodontics and it is quite obvious that the vast majority of endodontic procedures are as safe as it is possible to imagine any operative piocedure to be.(3) At the same time, one must be aware that risks may exist and even though he encounters them infrequently, the dental surgeon must be aware of their nature and how to deal with them. The main problems affecting the endodontist in relation to drug therapy and systemic disease which are clearly closely inter-related problems, are in connection with the following:

1 Antibiotics

These are widely used in medicine and in dentistry and hyper sensitization to penicillin is one of the few life endangering reactions which the dental surgeon may encounter.

2 Corticosteroids

These are given nowadays for a great number of diseases and are also in use in endodontic. Theoretically systemic corticosteroid therapy makes operative dental treatment dangerous but the actual risks must be assessed in each case.

3 Local Anesthetics

These, the most widely used drugs in dentistry, have various dangers associated with their use, but at the same time, by the abolition of pain diminish emotional disturbance and circulatory hazards in patients with cardiac disease.

4 Heart Disease

This, the most serious of the common diseases, must be given special consideration by virtue of its frequency and by virtue of the drugs used in its management and the risks associated with dental treatment.(4)

The authors used a custom-built electronic record system to investigate endodontic diagnostic and treatment outcome data in patients with and without diabetes The Editorial Board of the Journal of Endodontics has developed a literature-based study guide of topical areas related to endodontics. This study guide is intended to give the reader a focused review of the essential endodontic literature and does not cite all possible articles related to each topic. Although citing all articles would be comprehensive, it would defeat the idea of a study guide. This section will cover the relationship between systemic diseases and endodontics(5)Diagnosis is always complicated

by the fact that these diseases are viewed as an independent lesion when recognition of their interrelationship is critical to successful resolution and treatment of these lesions also require combined periodontic and endodontic therapy. There are over 300 different bacterial species in the oral cavity of which only limited number have been implicated as an important etiologic agent for the development of periodontitis as well as endodontitis (6) Periodontal pockets in adult patients harbor a floor in which spirochetes and other motile micro organisms are predominant. These morphotypes are often undetectable in healthy periodontal condition where the floor is virtually confined to the coccoid cells and straight rods. There is decrease in the count of spirochetes and rods followed by an increase in count of coccoids after scaling, root planning, root canal therapy and oral hygiene instruction at regular interval. This indicates the improvement of the combined treatment methods for perio and endo lesions towards betterment and good life span of involved tooth (7, 8) In this study we have made an attempt to study the clinical and microbiological parameters of periodontal and endodontically involved teeth prior to and after treatment.(9,12)

2. Materials and Methods:

Total 80 patients were selected for the study. Each patient had periodontal (> 5mm pocket depth) and endodontic problem (periapical radiolucency). There was no age limitation in considering the patients. All the patients were with systemic diseases and none of the selected patients received any type of periodontal therapy for the past 6 months. Preoperative sub gingival plaque samples were collected from the involved tooth with a sterile curette. The collected sample was suspended in 0.3ml of 0.9% of sterile sodium chloride solution by vigorously agitating the tip of the instrument in the solution. The samples were processed within one hour after collecting to minimize the clumping of the sample. Smears were prepared by using the sterile platinum loops and the smears were stained with Fontana's stain for microbiological analysis. Then full mouth scaling and root planning was carried out with ultrasonic instruments and later the patient was subjected for the root canal therapy. The root canal therapy was performed within the next 2-3 visits. 4 weeks (30 days) from the base line, the patient was reevaluated for clinical parameters and microbiological analysis. Clinical correlation was made by (6, 8, 9), pocket depth (10, 11, 12) and gingival index

3. Results:

Table (1) & Fig (1): Clinical Parameters Particulars On Day 40 Day Difference (1-40).

Gingival Mean 2- 1.28 Standard Deviation 0.5 0.30 -- F. Value - - 1.35 Significance Very Significant.

Tab (1): Clinical Parameters Particulars On Day 40 Day Difference (1-40) gingival index

Clinical parameters	particulars	On day	40day	Different(1-40)
	mean	2	1	1.25
	Standard deviation	0.5	0.45	-
	f.value	-	-	1.35
	significance	Highly significance		

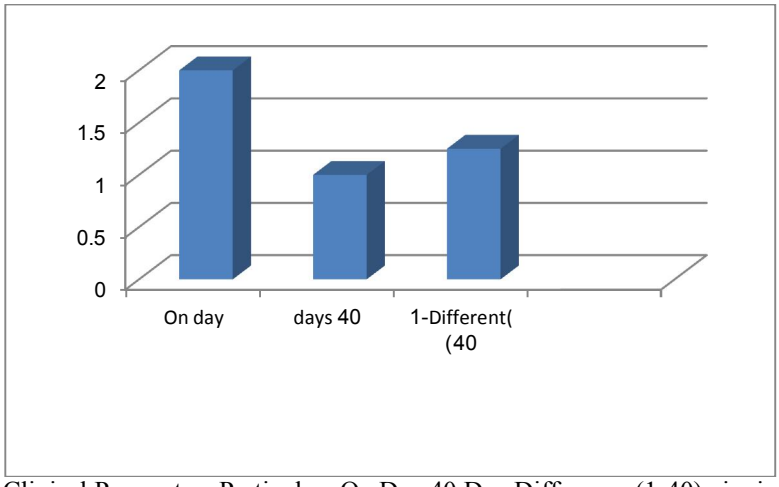

Fig. (1) Clinical Parameters Particulars On Day 40 Day Difference (1-40) gingival index

Table (2) & Fig (2): Clinical Parameters Particulars On-Day 40 Day Difference (1-40).
Pocket Depth Mean 4-6 Standard Deviation 0.75-3.65 f. Value - - 14.75 Significance Highly Significant.

Tab (2): Clinical Parameters Particulars OnDay 40 Day Difference (1-40) Pocket Depth

Clinical parameters	particulars	On day	40 days	Different (1-40)
	mean	4-6	3-4	2-2.2
	Standard deviation	0.75	3.65	2.25
	f.value			14.75
	significance	Highly significance		

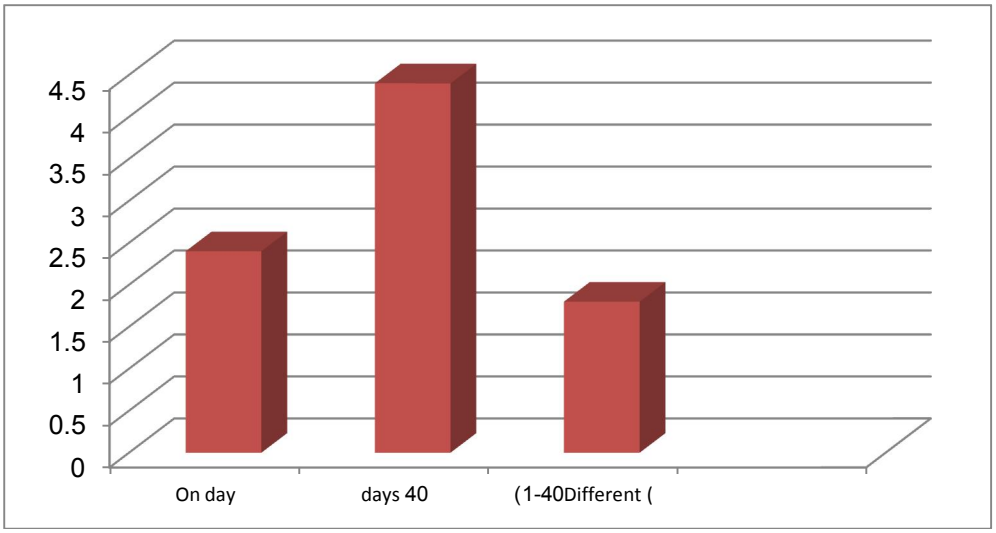

Fig (2): Clinical Parameters Particulars OnDay 40 Day Difference (1-40) Pocket Depth

Table (3): Microbiological analysis of coccoid between baseline (0n day) to the end of the study (40day) showed marked increase from 21% to 70% with mean percentage of difference of 40%, Z value of 20%, which was statistically highly significant. Analysis of rod forms between baseline to end of the study showed moderately decreased level from 30% to 23% with a mean percentage of -11%, Z value 8% which was statistically not significant. Analysis of spirochetes between baseline to the end of the study showed decreased level from 30/- 14 to 10+/- 7with a mean percentage of -23.14%, Z value 7.97% which is statistically highly significant.

Table (3): Clinical parameters of the mean of different microorganisms

Clinical parameters	particulars	On day	40day	Different(1-40)
Coccid cells	mean	21	70	40
	Standard deviation	7	11	4
	z.value	-	-	20
	significance	Highly significance		
Rod form	mean	30	23	10
	Standard deviation	15	15	1,5
	z.value			8
	significance	Highly significance		
Spiral form	mean	30	10	22
	Standard deviation	14	7	-
	z.value			6
	significance	Highly significance		

4. Discussion:

The influence of endodontic infection has been investigated with reference to infection propagation through accessory and lateral canal. There are several potential pathway of infection spreading from root canal to periodontium worsening the health of the

periodontium (11) Bacteria are the major cause of pulpal and periapical diseases. Complexity of the root canal system, invasion of the dentinal tubules by microorganisms, formation of smear layer during instrumentation and presence of dentin as a tissue are the major obstacles for complete elimination of bacteria during cleaning and shaping of root canal systems. The bacterial population of infected root canals can be significantly reduced by using saline irrigation; however, irrigants that have antibacterial effects have clearly superior effectiveness in bacterial elimination when compared with saline solution. The irrigants that are currently used during cleaning and shaping include NaOCl, CHX, EDTA and MTAD. None of these irrigants has all of the characteristics of an ideal irrigant. Sonic and ultrasonic vibrations alone or in combination with antibacterial irrigants as well as application of negative pressure have been used to increase the efficacy of these irrigants. Intracanal medicaments have been used to disinfect root canals between appointments and reduce interappointment pain. The major intracanal medications currently used in endodontics include Ca(OH)2 and CH. The search for an ideal material and/or technique to completely clean infected root canals continue.

Summary and Conclusion:

In this study, the clinical and microbial status of the pre and post therapy of the perioendo lesions were analyzed. There was a marked decrease in the gingival index, plaque index and pocket depth scores including counts of spiral and rods demonstrating significant correlation between endodontic infection and periodontal status in the involved tooth. So a treatment plan which includes scaling, root planning with an immediate root canal therapy improves the attachment apparatus of periodontium but also saves the tooth, which is the best and natural space maintainer. Though the study was carried out in 40 patients analyzing in 4 weeks, there is a further scope for the study in larger group of patients with increase in the time interval is needed: Patients with diabetes have increased periodontal disease in teeth involved endodontically and have a reduced likelihood of success of endodontic treatment in cases with preoperative periradicular lesions.

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